

First confirmed record of the white shark *Carcharodon carcharias* (Lamniformes: Lamnidae) from Indonesia

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A six metre adult male of the white shark Carcharodon carcharias was caught by demersal longliners operating off Dompu, Indonesia. The specimen was landed and sold at Tanjung Luar landing site in eastern Lombok. Photographic evidence for this specimen is provided and an upper lateral tooth was retained. This is the first confirmed record of the species in Indonesian waters.

Keywords: white shark, record, Indonesia

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INTRODUCTION

The white shark, *Carcharodon carcharias* (Linnaeus, 1758) is the largest, non-filter feeding shark species, and it commonly reaches a maximum total length (L_T) of 5–6 m, although larger specimens are suggested (Compagno, 1998; Compagno *et al.*, 2005). This species is most commonly encountered in coastal and offshore waters of continental and insular shelves, including shallow bays, but also occurs in oceanic waters and on the continental slope (Compagno *et al.*, 1997; Compagno, 2001; Last & Stevens, 2009). It has a cosmopolitan distribution in all seas including cold boreal waters, temperate and subtropical regions, and has been occasionally recorded from several inshore tropical regions, such as in the central Pacific (Taylor, 1985; Compagno, 2001), the Coral Sea (Last & Stevens, 1994, 2009), Papua New Guinea (Burgess & Callahan, 1996), northern Brazil (Gadig & Rosa, 1996) and the tropical south-west Indian Ocean (Cliff *et al.*, 2000). While widely distributed, the species is relatively uncommon in tropical waters compared to other large macropredatory sharks, and is more frequently seen and caught in inshore temperate waters (Compagno *et al.*, 1997). It is far more abundant in cool to warm temperate waters rather than in the warm tropical waters (Compagno, 1998).

White sharks are occasionally recorded close to offshore islands both in the Pacific and the Atlantic and have been reported as by-catch in various offshore fisheries, such as tuna longline and squid fisheries (Burgess & Callahan, 1996; Fergusson, 1996; Compagno, 2001). Both tagging and genetic studies have shown that white sharks are highly migratory, and capable of making transoceanic movements, e.g. between South Africa and Australia (Pardini *et al.*, 2001;

Bonfil *et al.*, 2005) and between Mexico and Hawaii (Compagno *et al.*, 2005).

Although the extrapolated distribution of white sharks includes Indonesia, there are no definitive records of this species from Indonesian waters. This paper presents the first record of *C. carcharias* from this country.

MATERIALS AND METHODS

On 31 July 2013, a large white shark was caught by demersal longline fishers from Maringkik, West Nusa Tenggara operating about 11 km off Dompu, West Nusa Tenggara (08°51'S 118°18'E). The shark was harpooned as it followed hooked fish on the longlines during the retrieval operation at about 3 am. Due to its very large size, the body was cut into five pieces before being brought to the Tanjung Luar landing site in eastern Lombok (08°48.2'S 116°30'E) by three fishing boats.

Information about this specimen was recorded by the authors during a market survey of Tanjung Luar, during which the local people showed photographic evidence and some retained teeth. Basic data such as length and sex were gathered from fisheries enumerators who regularly recorded shark landings at this site (for the total length) and from a shark-fin merchant (for fin measurements). The only body part of the specimen that could be recovered by the authors was an upper lateral tooth. This tooth is catalogued at the Research Centre for Oceanography's collection (NCIP 6548) in Jakarta (Figure 2).

RESULTS AND DISCUSSION

An adult male white shark was landed at Tanjung Luar market in five pieces. The specimen was approximately 6.6 m L_T . The first dorsal fin measured 850 mm from base to apex, and

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Fig. 1. *Carcharodon carcharias*, adult male, at Tanjung Luar landing site: (A) the body in five pieces; (B) dorsal fin; (C) caudal fin.

pectoral fin length was 1150 mm (Figure 1). The shark was sold for 11 million rupiahs (equivalent to approximately US\$ 970) and was processed on the same day. The only material retained was several teeth and one of them was collected and measured by the authors. The dimensions of the tooth are: perpendicular height (from tooth base to apex) 31.3 mm; anterior margin 49.9 mm; and posterior margin 39.6 mm. The tooth exhibits the strong serrations characteristic for this species. Upper anterolateral teeth of white sharks are upright and triangular with only the more posteriorly

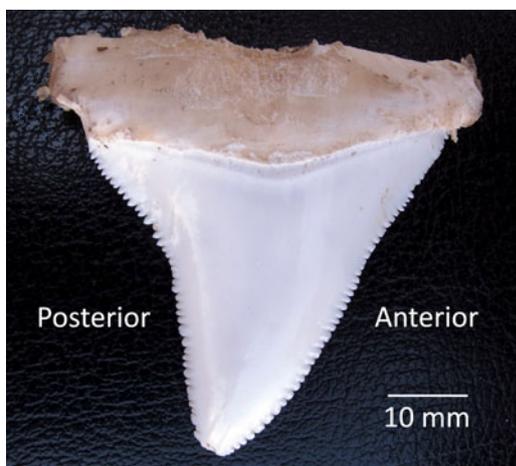


Fig. 2. Upper lateral tooth of *Carcharodon carcharias* (NCIP 6548).

located upper teeth having slightly oblique cusps. Thus, this tooth is likely from the 8th–9th row from the symphysis based on its morphology.

This record of *C. carcharias* from eastern Indonesian waters confirms the presence of this species in this region. The fishers mentioned that the shark was chasing fish that had been caught on demersal longlines as they were brought to the boat. Five boats were involved in the capture of the shark and it was cut into 5 pieces to fit in their boats. The demersal longline boats which operate out of Tanjung Luar are relatively small vessels with a 25 HP motor, and fish about 16 km from the coast in waters of 50–100 m depth. The target of this fishery is large demersal fish such as rays (including rhynchobatids, rhinobatids and dasyatids), sharks (including carcharhinids, sphyrnids, triakids and orectolobids) and also large demersal teleost fish. The occurrence of the white shark in southern Indonesia is likely to be a rare event. The shark fishers at Tanjung Luar have been fishing for sharks for many decades and this species has never been sighted before. The white shark is known to occur, although rarely, in tropical waters such as north-west Africa, east Africa (Kenya, Tanzania), the Seychelles, Mauritius, Madagascar, Sri Lanka, northern Australia, New Caledonia and the Philippines (Compagno *et al.*, 1997; Fergusson *et al.*, 2009) and now has been confirmed from Indonesia.

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